DOCUMENT RESUME

ED 311 573 EA 021 344

AUTHOR	Kaagan, Stephen S.; Coley, Richard J.
TITLE	State Education Indicators: Measured Strides, Missing Steps.
INSTITUTION	Center for Policy Research in Education.; Educational Testing Service, Princeton, N.J.
PUB DATE	89
NOTE	45p.
AVAILABLE FROM	Publications Order Service, Educational Testing Service, P.O. Box 6736, Princeton, NJ 08514 (Stock No. 239012; $3.75 prepaid).
PUB TYPE	Reports - Research/Technical (143)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	Academic Achievement; *Accountability; *Educational Policy; *Educational Quality; Elementary Secondary Education; Evaluation Criteria; *Program Effectiveness; State School District Relationship; State Standards; State Surveys
IDENTIFIERS	*Indicators

ABSTRACT

This document examines one important means of achieving accountability in a state's education system: the introduction of statewide education indicator systems, monitoring such aspects as the performance of students and the various factors affecting that performance. This report is divided into three sections. The first section describes the genesis of education indicator systems and discusses important definitions and necessary components at both state and local levels. The section provides vignettes of state education indicator systems in four states: Connecticut, South Carolina, New York, and California. The examples of state practices point to areas of concern that must be given attention as indicator systems are developed. The third section presents conclusions and recommendations that focus on multistate or national tendencies. The section closes with five necessary steps that must be taken if state indicator systems are to become useful policy tools at both state and local levels. (25 references) (SI)

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State Education Indicators:

Measured Strides Missing Steps

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and
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State Education Indicators:

Measured Strides Missing Steps

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Acknowledgments

This report was funded jointly by the Center for Policy Research in Education (CPRE) and Educational Testing Service (ETS). CPRE is a consortium of Rutgers University, Michigan State University, Stanford University, and the University of Wisconsin - Madison and is financed by a grant from the U.S. Department of Education, Office of Educational Research and Improvement.

We are grateful to the chief state school officers of the four states that agreed to participate in the study and provided us access to many state education agency staff and local and elected officials: Bill Honig, California; Thomas Sobol, New York; Gerald N. Tirozzi, Connecticut; and Charlie G. Williams, South Carolina. Education officials in other states were also helpful in providing information.

The manuscript was reviewed by the following individuals and was improved substantially as a result: Paul Barton, Policy Information Center, ETS; Ruth Ekstrom, Division of Education Policy Research, ETS; Richard Elmore, College of Education, Michigan State University; Mark Fetler, Educational Planning and Information Center, California State Department of Education; Susan Fuhrman, Center for Policy Research in Education, Rutgers University; Margaret Goertz, Division of Education Policy Research, ETS; Philip Kearney, School of Education, the University of Michigan; Ben King, Division of Statistical and Psychometric Research and Services, ETS; John Murphy, New York State Education Department; Peter Prowda, Division of Research, Evaluation, and Assessment, Connecticut State Department of Education; Paul Sandifer, Office of Research, South Carolina Department of Education; James Smith, California State Department of Education; and Michael Turner, Office of School District Accreditation and Assessment, South Carolina Department of Education.

Finally, the manuscript benefitted from the editorial skills of Albert Benderson (ETS Communications Services) and the desk-top publishing skills of Carla Meadows (ETS Policy Information Center).

Any errors of fact or interpretation, as well as the views expressed, are the authors'.

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Preface

As education reformers have blazed new trails throughout the decade, they have increasingly sought better maps of where they have been and where they are going. The discussion of this mapping has coalesced around the term "education indicator systems." While considerable effort has gone into defining and producing such systems by groups such as the Council of Chief State School Officers, the National Center for Education Statistics, the National Research Council, the National Science Foundation, the RAND Corporation, and individual states, all would agree that there is a long way to go, both technically and politically.

The challenge was stated by Marshall Smith in Phi Delta Kappan:

Indicators are designed to reflect the health and efficiency of an education system and to point the way toward its improvement.

To develop a set of indicators that does these things requires an image of a fully functioning system.

In State Education Indicators: Measured Strides, Missing Steps, Stephen S. Kaagan and Richard J. Coley offer their image of an education indicator system, with optimism and clarity of purpose. This publication results from a project jointly funded by the Center for Policy Research in Education at Rutgers University and Educational Testing Service. It combines the experience of being a chief state school officer during the reform period (Kaagan), formal and informal visits to a number of states (both authors), and familiarity with the recent work of others, to arrive at some views about "right vision" for the future. It is addressed more to practitioners than to academics, and passes on some lessons that have emerged in the creation and operation of indicator systems.

We are pleased to make these views available to the education community.

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Introduction

As educational reforms have been implemented in the 1980s, attention has turned to the questions: What differences are they making, and how will we know? According to the National Conference of State Legislatures, "Accountability is hot"; it was identified as a top priority for 1989 by committee chairs in 31 states (Education Week, January 18, 1989). This report is about one important means of achieving accountability: the introduction of statewide "education indicator systems." We aim to describe the state of the art in the development of such systems, identify critical points in the path of their development and improvement, and point out ways of judging whether these systems are succeeding or failing. The report reflects the belief that measurement of key aspects of a state's education system, such as the performance of students and the various factors affecting that performance, will continue to be a "growth industry" as state leadership applies its hand to the challenge of improving schools.

This report is about one important means of achieving accountability: the introduction of statewide "education indicator systems."

After an inspiring level of state educational reform activity during the last five years, policy makers are looking for data to provide clues to further policy development and to fine-tune existing reform programs. National reports like A Nation at Risk, as well as efforts by the Secretary of Education to compare states on the basis of education indicators, pointed out the meager quality and quantity of education statistics in our country, particularly at the state level. Public officials and citizens alike want to know what their investments in public education have bought. State education agencies are responding by building new information systems and seeking ways of applying them.

This report is divided into three sections. The first section describes the genesis of education indicator systems and discusses important definitions and necessary components. The focus of the section is on the central features of such systems and on the issues that must be addressed with regard to their purposes, applications, and effects at both state and local levels. The second section provides vignettes of state education indicator systems in the four states we visited. These descriptions make the conclusions and recommendations that follow more comprehensible by providing appropriate context

and substantiation. Examples of state practices point to areas of concern that must be given attention as indicator systems are developed. The third section presents the study's conclusions and recommendations, focusing on those that reflect multistate or national tendencies. The section closes with some necessary steps that the authors believe must be taken if state indicator systems are to become useful policy tools at both state and local levels.

A word about how we prepared this report. One of us (Kaagan) served as a Chief State School Officer (Vermont) for six years and was heavily involved with the Council of Chief State School Officers in its new effort to support the development of a state-by-state comparison system. A review of the growing body of literature on education indicator systems was followed by a field study with the following elements:

- Formal site visits in four states that are considered by many to be front-runners in the development and use of indicator systems (California, Connecticut, New York, and South Carolina). A structured interview protocol guided discussions with state education agency staff, governor's office staff, legislators and legislative staff, state business and community leaders, education association representatives, and selected local school officials.

- Analysis of data and interview results from a six-state database developed by the Center for Policy Research in Education to study the effects of state-level reforms of the 1980s (Arizona, California, Florida, Georgia, Minnesota, and Pennsylvania).

- Substantial involvement with Missouri education leaders during 1988 and 1989 to assist them develop a state education indicator system.

- Informal visits to four states (Arkansas, Minnesota, Texas, and Wáshington).

Several major academic studies on education indicators that we believe provide a sound conceptual base have recently been published. What we report here emerges from our perceptions of state experience in the development and use of state indicator systems; we believe some lessons are accumulating that will benefit the growing number of

people using indicator systems. A useful summary of key characteristics of state indicator systems is provided in Figure 1, "Key Dimensions of the 50-State Performance Accountability Systems" (OERI, 1988).

What Indicator Systems Are and Why They Are Important

The Changing State Role

State leaders have always been involved with education management. In the last five years, they have entered the arena of school management, and it is unlikely that they will withdraw in the years ahead. What this means is that governors, legislators, and state education agency leaders are no longer operating on the outer edges of the school business, modulating school finance mechanisms and making school redistricting arrangements. Instead, they are smack in the middle of the action, wrestling with matters of school effectiveness, teacher policy, curriculum emphases, and student performance. And in many state education agencies, the focus of attention and activity has changed from process (e.g., number of hours per week of math) to substance (e.g., the content of the math courses). This has happened whether the state is more accustomed to centralized management of schools or is steeped in the tradition of local control. States have decided in the last half decade to be major actors on the core issues of schooling and have looked for policy instruments to affect those core issues. States with more centralized approaches to school governance have tended to rely more on mandates and to be more directive, such as when they pass laws specifying statewide curriculum. Those more decentralized have tended to rely less on mandates and more on incentives that allow substantial local latitude, such as project grants that allow localities choices in their use.

Governors, legislators, and state education agency leaders are no longer operating on the outer edges of the school business...Instead, they are smack in the middle of the action, wrestling with matters of school effectiveness, teacher policy, curriculum emphases, and student performance.

The net result is that the state has asserted itself as a top manager of school operations. This does not mean, except in rare instances, that the state has become the line manager of schools, but that it has endeavored to take more control,

Figure 1

KEY DIMENSIONS OF THE 50 STATE PERFORMANCE ACCOUNTABILITY SYSTEMS

State	Is the system State, local or mixed State and local? Level	Is there a comprehensive system of indicators? Indicator System	What types of tests are used? * Test Type	Does State publicly report data on schools, districts, the State? Public Report: School	Public Report: District	Public Report: State	Does State report comparisons or in a form that allows comparisons? Compare	Is data reported in context of demographic factors? Context	Does performance trigger rewards, sanctions or other consequences? Policy Links
Alabama	State	No	Both	Yes	Yes	Yes	Yes	No	No
Alaska	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arizona	State	No	Achievement	Yes	Yes	Yes	Yes	No	No
Arkansas	State	No	Both	No	Yes	Yes	Yes	Yes	Yes
California	Mixed	Yes	Both	Yes	Yes	Yes	Yes	Yes	Yes
Colorado	Mixed	Yes	Achievement	No	Yes	Yes	Yes	Yes	No
Connecticut	State	Yes	Achievement	No	Yes	Yes	Yes	Yes	Yes
Delaware	State	No	Achievement	Yes	Yes	Yes	Yes	No	No
DC	State[1]	No	Both	Yes	Yes	Yes[1]	Yes	No	Yes
Florida	State	Yes	Both	Yes	Yes	Yes	Yes	Yes	Yes
Georgia	State	No	Both	Yes	Yes	Yes	Yes	Yes	Yes
Hawaii	State[1]	Yes	Both	Yes	Yes	Yes[1]	Yes	Yes	Yes
Idaho	State	No	Achievement	No	No	No	No	No	No
Illinois	Mixed	Yes	Achievement	Yes	Yes	Yes	Yes	No	Yes
Indiana	State	Yes	Both	Yes	Yes	Yes	Yes	Yes	Yes
Iowa	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Kansas	State	Yes	Achievement	No	Yes	Yes	No	Yes	No
Kentucky	State	Yes	Both	Yes	Yes	Yes	Yes	Yes	Yes
Louisiana	State	No	Both	Yes	Yes	Yes	Yes	Yes	Yes
Maine	State	No	Achievement	Yes	Yes	Yes	Yes	No	No
Maryland	State	No	Both	Yes	Yes	Yes	Yes	No	No
Massachusetts	State	No	Both	Yes	Yes	Yes	Yes	Yes	Yes
Michigan	State	No	Achievement	Yes	Yes	Yes	Yes	No	Yes
Minnesota	Local	No	Achievement	No	Yes	Yes	Yes	No	Yes
Mississippi	State	Yes	Both	Yes	Yes	Yes	Yes	Yes	Yes
Missouri	State	No	Both	No[2]	Yes	Yes	No	No	No
Montana	None	No	Achievement[3]	No	No	No	N/A	N/A	N/A
Nebraska	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Nevada	State	Yes	Both	No	Yes	Yes	Yes	No	No
New Hampshire	State	No	Achievement	No	No	No	Yes	No	No

* Achievement, competency, or both

Figure 1 (continued)

State	Level	Indicator System	Test Type	Public Report			Compare	Context	Policy Links
				School	District	State			
New Jersey	State	No	Both	Yes	Yes	Yes	Yes	Yes	Yes
New Mexico	Mixed	Yes	Both	No	No	Yes	Yes	Yes	Yes
New York	State	Yes	Both	Yes	Yes	Yes	Yes	No	Yes
North Carolina	State	No	Both	Yes	Yes	Yes	Yes	Yes	Yes
North Dakota	None	No	Achievement[3]	No[2]	No[2]	Yes	Yes	No	No
Ohio	Mixed	Yes	Both	Yes	Yes	Yes	No	No	No
Oklahoma	State	No	Achievement	No	Yes	Yes	Yes	No	Yes
Oregon	Mixed	Yes	Both	No	No	Yes	No	No	No
Pennsylvania	State	Yes	Both	Yes	Yes	Yes	Yes	Yes	Yes
Rhode Island	State	Yes	Achievement	Yes	Yes	Yes	Yes	No	No
South Carolina	State	Yes	Both	Yes	Yes	Yes	Yes	Yes	Yes
South Dakota	State	No	Achievement	No	No	No	No	No	No
Tennessee	State	No	Both	No	Yes	Yes	Yes	No	No
Texas	State	Yes	Both	Yes	Yes	Yes	Yes	Yes	Yes
Utah	Mixed	Yes	Both	No	No	Yes	Yes	Yes	No
Vermont	Local	Yes	Competency	No	No	N/A	N/A	No	No
Virginia	State	No	Both	No	Yes	Yes	Yes	No	Yes
Washington	State	Yes	Achievement	No	Yes	Yes	Yes	Yes	Yes
West Virginia	Mixed	Yes	Both	No	Yes	Yes	Yes	No	No
Wisconsin	Mixed	No	Both	No	No	Yes	No	No	No
Wyoming	State	No	Achievement	No	No	Yes	No	No	No
Totals	S=35 L=2 M=9 None=5	Yes=23 No=25 N/A=3	A=18 C=1 Both=29 N/A=3	Yes=25 No=23 N/A=3	Yes=37 No=11 N/A=3	Yes=43 No=4 N/A=4	Yes=38 No=8 N/A=5	Yes=21 No=26 N/A=4	Yes=25 No=22 N/A=4

SOURCE: Council of Chief State School Officers 1987 Survey and related State documents.

1 The District of Columbia and Hawaii each operate a single system in which the State and the district are the same.
2 Missouri and North Dakota send school—(plus North Dakota district)—level data to parents but not to the press.
3 Montana and North Dakota offer local districts the option of using a State achievement test.

Reprinted from: *Creating Responsible and Responsive Accountability Systems.*
U.S. Department of Education. Office of Educational Research and Improvement.
September 1988. pp. 28-29

whether subtly through capacity-building measures or not so subtly through mandates.

The Place of Education Indicator Systems

Principally, this state control is being expressed through the monitoring of local district compliance with new or expanded bodies of rules or regulations, through a variety of measures intended to upgrade the quality of school staff, and strategic allocations of material resources and recognition (e.g., monetary rewards, project grants, honors for excellence) to encourage desired behavior. Another consequential way the state presence is increasingly felt is through the development of state indicator systems — selected forays into local operations to glean information about what is happening and why and to identify problem areas that should be addressed. These systems often entail the development of new or expanded data systems.

Indicators and Indicator Systems Defined

Carefully crafted and gathered statistics are the basic building blocks of indicator systems. These statistics are derived from a test, a survey, or collection of information on important aspects of the education system. Ideally, they are derived from tests, surveys, or data collection carried out periodically to produce comparable data over time. The statistics are designed to be useful in describing some quantitative or qualitative aspect of the education system. In creating a system useful for policy, judgment calls are necessary in selecting "indicators" or statistical series, for some measures have greater currency, or present value, than others. To illustrate, the number of high school age students who drop out of school is a more valued statistic than the total available square footage of a system's schools; there is a strong constituency concerned about dropouts, with enough data available to document a problem. It would not be hard, however, to imagine the latter measure becoming important if available classroom space was halved in the next few years. In contrast to designs for evaluation of specific changes, indicator systems need to have open architecture and continuity over a period of time to be useful when an aspect of the educational system becomes an issue .

In contrast to designs for evaluation of specific changes, indicator systems need to have open architecture and continuity over a period of time to be useful when an aspect of the educational system becomes an issue .

Accordingly, the challenges in developing an education indicator system are to get key constituencies involved in articulating the goals of education, and then to quantify these factors and gather the necessary data. This is not an easy task. Getting consensus on what is important, quantifying it, and obtaining the data are formidable, but necessary, steps in the development of an indicator system. To summarize, an indicator is a statistic that is judged important; it is a "vital sign" regarding the "health" of the educational program. An indicator system is a comprehensive set of such vital signs. (For a good, comprehensive description of education indicator systems, see Oakes, 1988.)

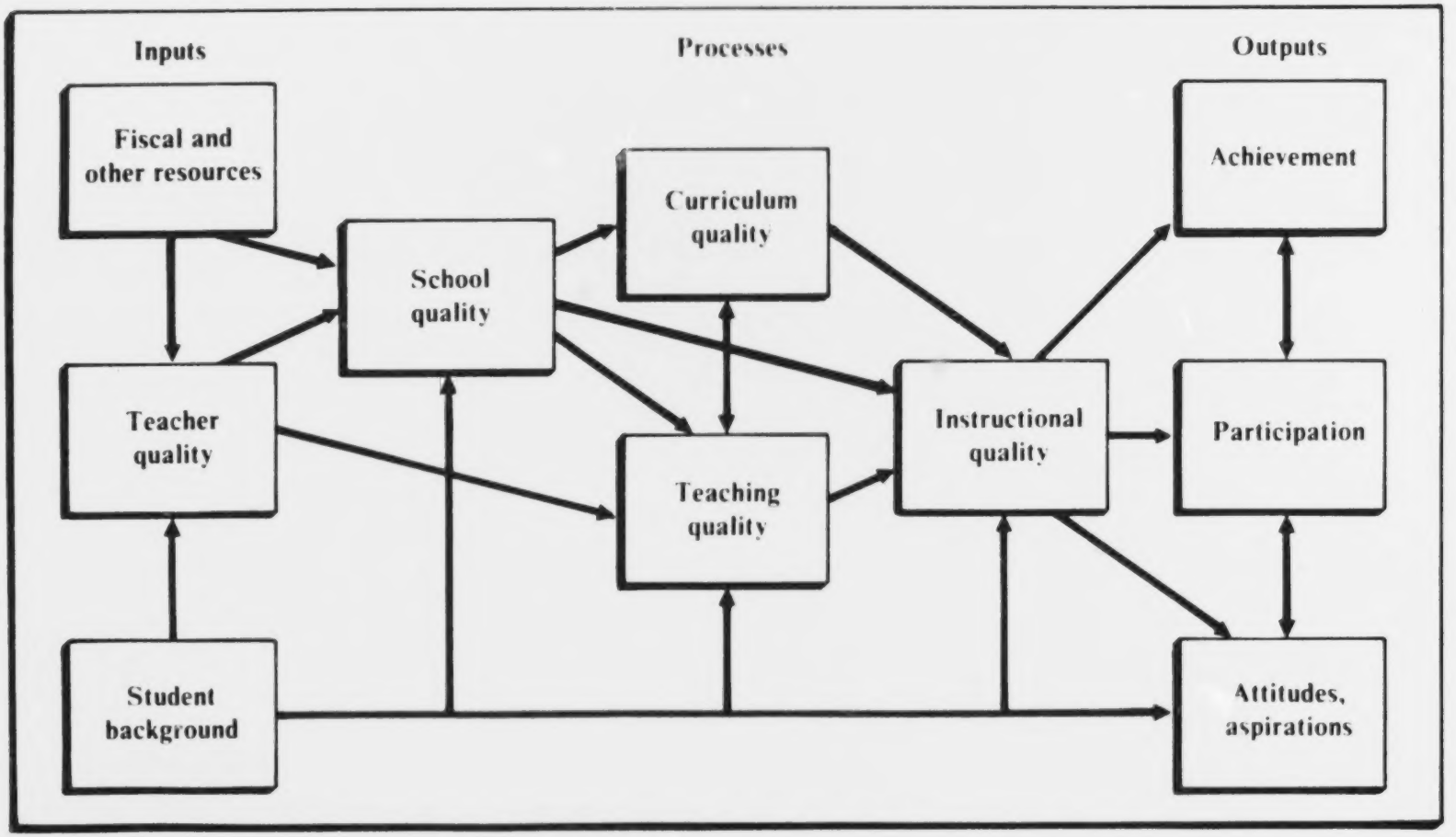
Looked at as a number on a barren page, a statistic, however important the phenomenon it measures, has modest usefulness. Only when its value falls short of or exceeds a level of legitimate comparison does it become significantly useful. A dropout rate of 10 percent for a high school may appear acceptable until it is shown to be twice that of a similar school down the road, or not to meet the community's need for full participation in school. The usefulness of an indicator rests on its ability to show what happens over time, what it can say about the performance of a school or district compared to other schools or districts, or how the condition it measures compares with societal needs or expectations.

The usefulness of an indicator rests on its ability to show what happens over time, what it can say about the performance of a school or district compared to other schools or districts, or how the condition it measures compares with societal needs or expectations.

An indicator system is a framework into which an array of indicators are placed for review and analysis, leading to necessary modifications of policy and practice. Indicators are placed so that relationships among them can be examined; the framework that has gained general acceptance for presenting data in such a way is the "input, process, outcome" model shown in Figure 2 (Shavelson, 1987). This model demonstrates how input, process, and outcome components can be related to each other.

In this model, "outcome" comprises some results expected of schooling; "process" identifies the school ingredients most directly responsible for outcomes; and "input" represents certain extremely important, but less malleable, school and nonschool characteristics that have well documented effects on outcomes. These input or context variables are seldom within the control of the school, particularly in the short term. An example of an outcome measure is student knowledge as assessed by an achievement test; process, the amount of time an elemen-

Figure 2: Linking Elements of the Educational System



Source: Richard Shavelson, et al. *Indicator Systems for Monitoring Mathematics and Science Education*, the RAND Corporation, August 1987

tary teacher dedicates per week to science instruction; and input, the percentage of children from low-income households.

For an indicator system to reach its full potential, the willingness and capability to encompass inputs, processes, and outcomes and establish the relationships among them, are essential. The important information provided by performance statistics is enriched when viewed in relationship to the prime components of the system. The use of any statistic for policy purposes carries an implicit model of the dynamics of a system; it is better to make the model explicit and increase understanding of the statistic's significance. Leadership — at all levels — has to wrestle with these relationships if indicator systems are to inform policy and if the benefits are to match or exceed the costs of development. Put simply, the reporting of test scores alone does not make an indicator system; it may show ups and downs but will not lead to any understanding of why changes are occurring. Construing relationships among indicators is not an automatic exercise; judgment remains essential. But ordering and examining relationships (as in the diagram) are critical if the indicator system is to reveal what leads to success or failure.

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The Prime Purpose of State Indicator Systems

With some knowledge of what an indicator and an indicator system are, one can now turn to the more intriguing matters of purposes and applications. For what purpose might indicator systems be deployed? For what purposes are they being deployed? Answers to these two questions will provide us with a clearer sense of the importance of indicator systems to the governance and management of education and a greater recognition of the distance that needs to be traveled for the systems to reach their true potential.

The essential purpose of education indicator systems is to assess direction, mission, and strategy.

The essential purpose of education indicator systems is to assess direction, mission, and strategy. For state officials, this means reviewing and analyzing the aims of the state's education system and determining whether they are being met. Assessing aims is increasingly necessary as state leaders have become more outspoken about what schooling should achieve and have acted to impress their views on localities.

Above all else then, indicator systems should assist state officials in determining "right vision," a term used by Peter

An indicator system, in effect, is a device for setting organizational direction, by reconciling aims with actions and making adjustments in response to effects and to revealed relationships among effects, school treatments, and contextual variables.

Drucker. The yield of the systems should provoke governors, legislators, state boards of education, and state education agency leaders and staff to assay what the system is accomplishing against what it should be accomplishing and ultimately to adjust their sights, i.e., set policy and regear programs appropriately. An indicator system, in effect, is a device for setting organizational direction, by reconciling aims with actions and making adjustments in response to effects and to revealed relationships among effects, school treatments, and contextual variables.

"Right vision" means that the individual creating the measure (indicator system) is responsible for making that measure congruent with the policy aims being pursued. "Right vision" bespeaks the state's top management responsibility for setting direction and assessing whether it is being pursued. It implies that the state, while designing an accountability system, be accountable for making the critical link between what is assessed and what schools are supposed to be doing.

Drucker (1974), makes this point very well in delineating top management's measurement responsibilities:

> *"That we can quantify something is no reason for measuring it. The question is 'Is this what a manager should consider important?' 'Is this what a manager's attention should be focused on?' 'Is this a true statement of the basic realities of the enterprise?' 'Is this the proper focus for control, that is, for effective direction with maximum economy of effort?' "*

and he adds later:

> *"Because controls have such an impact, it is not only important that we select the right ones. To enable controls to give right vision and to become the ground for effective action, the measurement must also be appropriate. That is, it must present the events measured in structurally true form."*

Related Applications

Applications of indicator systems can be placed along a continuum from providing simple information at one end to labeling schools or districts as academically bankrupt at the other. An elementary application may reveal the effectiveness of the system to interested parties, presenting state and local government officials, societal organizations, parents, and education professionals with the data on outputs, processes, and inputs. This provides grist for democratic decision making — letting citizens and their representatives know how well or poorly the schools are doing and providing some contextual information in which to couch the results. A second and more complex application is determining whether policies and programs are being successful, if what is being done in schools is making any difference, and if so, to whom and in what ways. A third is to suggest areas for further study that may produce evidence on which to base policy changes and program shifts.

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An application of another sort, with a different purpose altogether, is to hold constituent entities and individuals accountable for results — local districts, including, perhaps, those hired to manage local school systems and those who provide educational services directly, administrators and teachers. The difference between what is termed above the essential purpose of indicator systems and this purpose is quite substantial. This purpose takes an indicator system well beyond providing data important to enforcing policy decisions and objectives. When there are direct consequences, tangible or intangible, attached to numbers, the burden on systems quality mushrooms. This function, of holding local operations accountable for performance, is markedly different from the use of the systems by state leaders to hold themselves accountable for determining policy direction, supporting it, and carrying it out. Both functions are equally important.

Some are strong advocates of only the latter. A particularly emphatic statement of this position is that of Peter Drucker:

"Measuring requires, first and foremost, analytical ability. But it also demands that measurement be used to make self-control possible rather than abused to control people from the outside and above — that is, to dominate them. It is the common abuse of this principle that largely explains why measurement is the weakest area in the work of the manager today" (Drucker, 1974).

Messages Indicators Send

By signalling what is important, indicators offer a unique opportunity to affect local practice.

Finally, regardless of purpose, indicator systems send messages or signals, usually in overbearing and truncated tones, across the board to all hearers (see David, 1988). By signalling what is important, they offer a unique opportunity for state policy makers to affect local education practice in a most efficient way. It is therefore essential that we understand what messages are intended, which ones are received, and by whom. The choice of signals to be sent should be made carefully; it should reflect state vision or goals and be sensitive to negative effects.

We need to understand that powerful forces for standardization are inherent in indicator systems, since they employ uniform metrics to assay what is happening in the real world. Olivia Golden, Lecturer at Harvard's Kennedy School of Government, has studied the tension between the need for standardization and accountability in large scale systems versus the need for local discretion. What she says about universal standards and regulations applies with equal force to the yield of education indicator systems:

"In a large program where subtle, individual interventions to improve quality are hard to carry out, politicians and managers will be tempted to impose universal standards and regulations instead, particularly given the concern for consistency. In a human services program where goals may be hard to specify, these regulations may have quite uncertain relations to the "real" program quality that matters to results" (Golden, 1988).

Some State Developments

This section contains brief vignettes of indicator systems in the four states visited for this study. These descriptions, supplemented from experience in other states, provide contexts, examples, and substantiation for the recommendations in the last section.

Connecticut

The momentum of education reform in Connecticut built up over a decade or so, spurred on by school finance reform legislation during the mid 1970s and a major education reform bill during the mid 1980s. Along with a steep increase in the state share of education funding came an increasing demand for accountability, both from the legislature and the business community. Connecticut's indicator system reflects the necessary political balance between this need for accountability and a strong tradition of local school district control.

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Evaluation, research, and development are prominent functions of the state education agency. Agency officials are enterprising and have created an audience for their products among the media and the public. The Division of Research, Evaluation, and Assessment engages in a broad range of activities including criterion-referenced testing of basic and higher order skills, special research studies, special program evaluations, and teacher assessment activities. The department is also well connected to prominent national research and development efforts.

The basis of Connecticut's accountability system is the State Board of Education's Design for Excellence: Connecticut's Comprehensive Plan for Elementary, Secondary, Vocational, Career and Adult Education, 1986-1990. This report includes the state's goals. For each goal, objectives have been established and a set of education indicators have been selected to report progress in meeting them. Figure 3 provides an example of Connecticut's state-level indicator reporting. It shows state progress in meeting one of the State Board of Education's goals — to ensure equity for all children. Local districts are required to develop local goals and objectives that

Figure 3: Connecticut's State Level Indicator Reporting

Indicators of Success

⬆	Change is in the desired direction.
⬇	Change is counter to the desired direction.
⟷	There is little change.
—	Baseline data. No comparable data were available before 1985-86.
⊘	No data indicating change are available.

Goal I: To Ensure Equity for All Children

Progress	Indicators of Success	Commentary
⬆	An increase in the state share of support for public education	The state share of the cost of public elementary and secondary education was 37.7 percent in 1983-84, rose to 39 percent in 1984-85 and is estimated to be 39.7 percent in 1985-86.
⟷	A decrease in the disparity among districts of elementary and secondary staffing ratios	Between 1984-85 and 1985-86 the disparity in staffing ratios between the 8th and 157th ranked district rose slightly from 39 to 40 percent.
⬆	A decrease in per pupil expenditure disparity among school districts	In 1985-86 there was a difference of 60 percent between the 95th and 5th percentile district ranked on expenditures per pupil. In 1984-85 this difference was 70 percent.
—	A decrease in the disparity among districts in starting and mid-career salaries	In 1985-86, there was a 77 percent disparity between the low starting salary of $11,497 and the high of $20,322. The disparity in mid-career salaries was 85 percent; master's degree maximum salaries ranged from $20,100 to $37,062.
⟷	A decrease in the disparity among the state's subgroups of students (race/ethnicity, sex, school district, parental income and similar subgroups) in participation in educational programs and educational outcomes	Several indicators are used to assess the disparity among the state's subgroups of students. The gaps in combined SAT scores between white and black and white and Puerto Rican students narrowed in 1985-86 to the smallest differences ever as the black and Puerto Rican averages increased and the average for white students decreased. Males averaged 7 points higher on the verbal SAT in 1985-86, one point less than the prior year. Males averaged 48 points higher on the mathematical SAT, 3 points more than the 1984-85 baseline level and slightly above the average difference over the past ten years. In 1985, 68.8 percent of white compared to 53.4 percent of minorities pursued educational activities after high school. The 15.4 percentage point difference between the two groups is 0.9 percentage points wider than the 1984 baseline difference. The gap between the percentage of white and minority students attending four-year colleges widened in 1985 as the percentage of whites increased 2.1 points to 48.9 percent and the percentage of minorities fell 0.3 points to 26.7 percent. The difference in graduation rates among whites (82.5%), blacks (61.7%) and Hispanics (46.2%) narrowed slightly between 1984 and 1985, as the black graduation rate increased by 0.7 percentage points, the Hispanic rate increased by 0.3 percentage points, while the rate for whites increased only 0.1 percentage points.

Source: *Meeting the Challenge, Condition of Education in Connecticut*, Connecticut State Department of Education (1986)

are consistent with the state goals, but districts are not required to report progress in meeting the goals. The system is clearly state-based. Of the 58 indicators, only nine are aggregated from student or school-level data. Seventeen are aggregated from district data. The indicators are presented to policy makers and the public in two alternating publications: in one year they are contained in a chapter in Meeting the Challenge: The Condition of Education in Connecticut, and in the next year they are contained in a separate publication, Indicators of Success. For each indicator, visual symbols and brief text easily convey state progress.

The heart of the district accountability program is the state's criterion-referenced testing program, the Connecticut Mastery Tests. In addition, other indicators from reports on expenditures, staff, and post-graduate activities of students are reported. The state discourages comparisons, and the data provided make district-by-district comparisons difficult. While the state reports test scores by district, the districts issue lower-level reports. Scores for individuals are reported to parents, classroom results are reported to teachers, and school results are reported to principals and superintendents.

Central to indicator system development in Connecticut is the issue of which policy making body will report school data. It is the philosophy of the state to report data on the unit over which it has control through resource allocation — the school district — and to leave school reporting to the local district. Other practical reasons for the state's philosophy include the following:

It is the state's philosophy to report data on the unit over which it has control through resource allocation — the school district — and to leave school reporting to the local district.

- the lag between the time that data are gathered and reported by the state and when they are available for use at the local level;
- the smaller the unit of analysis (e.g., school), the greater chance for reporting or measurement error; and
- the small amount of information gained by school reporting since most of the schools within districts are homogeneous (Prowda, 1988).

Officials do not see school reporting or "school report cards" as part of the landscape yet. While some leaders see them on the horizon, there is a fear that such reporting could

pervert the testing system and result in fierce resistance from local districts.

South Carolina

In South Carolina, "school report cards" provide direct comparisons of a school's test results, student and teacher attendance rates, and student dropout rates with other schools in the state.

As a state perennially ranked towards the bottom on state education indicators, South Carolina was perhaps more ready than other states for a comprehensive program of education reform. The Education Improvement Act (EIA) of 1984 contained 61 new or expanded initiatives designed to affect all types of students in all grades, all members of the education community, and parents and businesses as well. A one cent sales tax increase led to a six percent increase in the regular elementary and secondary appropriation, making the state the national leader in the percentage increase in state aid for public education during 1984-85 (Peterson, 1988). In return for this investment, the state mandated a comprehensive system of accountability and oversight.

In addition to state leaders who continue to monitor the new law through a joint subcommittee, a Division of Public Accountability was established within the state education agency to monitor and report on progress in implementing the EIA. Its annual report to the State Board of Education, What Is the Penny Buying for South Carolina, includes education indicators in six areas: academic achievement, services to students, services to school personnel, school conditions, community involvement, and public confidence. A sampling of these indicators reveals: SAT scores increased 29 points (largest increase in nation); students in remedial/compensatory programs showed average normal curve equivalent gains ranging from 4.42 to 7.92; the percentage of students scoring "3" or more on Advanced Placement examinations increased to 51 percent; teacher salaries reached the regional average; there was an increase of over 300 percent in business/education partnerships at the local level; and public perceptions of the quality of the education system were more positive than prior to the EIA.

The EIA provides monetary incentives to schools and local districts that achieve increases in academic achievement. "School report cards" provide direct comparisons of a school's test results, student and teacher attendance rates, and student dropout rates with other schools in the state. In

addition, for test results, comparisons are provided for schools with similar background characteristics. This is done by grouping the state's schools into five comparison groups based on certain context variables: percentage of free-lunch eligible students; average teacher's education level beyond the bachelor's degree; dollars per pupil collected locally above statutory requirements; and, for elementary schools, the percentage of first-grade students meeting the state readiness standard. In addition to percentile rankings of test results, the report cards present a matched longitudinal analysis of reading and mathematics test scores for the two most recent test administrations. Put simply, this procedure allows the calculation of score gains (or losses) of the same students from one year to the next. These gains or losses are added up at the school level and are used as the basis for the School Incentive Reward Program. When a school's gains reach a certain level, that school qualifies for a monetary award. The gain levels for rewards are set for each of the five comparison groups described above, resulting in awards to about one-quarter of the schools in each group.

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The EIA also requires the State Board of Education to adopt minimum standards for school district performance and to designate annually those districts that are "seriously impaired in educational quality." The criteria include achievement test results, dropout rates, accreditation deficiencies, and student and teacher attendance. In districts that receive an impairment designation, review committees conduct on-site investigations to identify problems and to formulate recommendations for improvement. Unsatisfactory implementation of the review committee's recommendations can result in the withholding of EIA money or the removal of the district superintendent.

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New York

New York reports education data at the state, district, and school level and is currently developing a system to report data at the level of the individual student. In 1987 the Governor and state legislature amended the state education law, requiring the publication of an annual "condition of education" report. An important feature of the law was that it required the display of data, both statewide and by individual district, by racial/ethnic group and gender. Published on January 1, 1989, A Report to the Governor and Legislature on the Educational Status of the State's Schools is composed of two volumes. The

first provides key indicators of educational excellence and equity, including data on population and enrollment characteristics, participation rates, student performance, attendance and high school completion, postsecondary education and employment, staffing, and finance. The second volume is a compilation of profiles for every public school district in the state containing information on student demographics, characteristics of teachers, expenditure data, and student performance.

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New York's Regents Action Plan called for a new set of education goals, which are now being phased-in. The plan included the Comprehensive Assessment Report, or CAR, which is the major state accountability reporting system. The state is preparing reports on the schools using both state and local data, including a variety of state test results, dropout and attendance rates, graduation rates and equivalency diploma program transfers, and socioeconomic indices. Based on these reports, the state gauges the performance of schools and identifies those in need of improvement. Local superintendents must present CAR results to their local boards at a public meeting and must implement improvement measures related to the CAR. Schools most in need of improvement must develop comprehensive school improvement plans through consultations among teachers, administrators, other professional staff, parents, and students in cooperation with the state education agency. To facilitate comparisons between schools or districts, the state publishes CAR data aggregated by category, e.g., community type, county, and New York City.

The new Regents School Improvement and Accountability Program (which still must gain final approval by the Board of Regents) builds upon the Regents Action Plan's CAR and school improvement planning requirements. The new program would add the following requirements:

- annual school reports for individual school buildings
- expanded data, at both district and school levels, on achievement, pupils, staff, and building conditions
- standards of excellence for students
- five-year education plans establishing goals, objectives, and strategies for school improvement

- a framework for maintaining accountability at the state, district, and individual school levels, and

- definition of the conditions under which the state would intervene to effect improvement at the local level, and the measures which the state would employ in doing so.

Finally, the new Student Information System (SIS), a comprehensive, computer-based system, has been implemented, at least in part, at a number of sites around the state, including New York City. The purpose of the system is to improve the monitoring, decision-making, and policy- making capacities of both local and state officials. It incorporates a variety of data on individual students, including biographical, attendance, academic, courses and scheduling, program participation, instructional management, and health and medical information. Teachers, principals, and others can use the system to identify and track academic and attendance trends and to identify and track at-risk students. The system is being implemented statewide through a technology network established across the state's districts.

California

California introduced two-part (state-produced and locally-produced) school performance reports in 1985 to help assess the impact of the state's reform legislation, to broaden the criteria by which schools are measured, to allow educators to provide input on how schools should be measured, to increase public support for schools by letting schools demonstrate success, and to reward schools for effectiveness. The state-produced reports provide information on trends in individual school performance, information on how a given school compares with schools throughout the state, and information on how a given school compares with schools with similar student bodies. Comparison groups allow for more equitable comparisons among schools and are based on a composite index made up of the following variables:

In California, state reports provide information on trends in individual school performance, information on how a given school compares with schools throughout the state, and information on how a given school compares with schools with similar student bodies.

- parent education and occupation;
- percentage of students with limited English proficiency;
- student mobility; and
- percentage of students receiving Aid to Families with Dependent Children (AFDC).

Schools are ranked from low to high on this index. A school's comparison group is composed of the 10 percent of schools ranked immediately above it and the 10 percent ranked immediately below it. For schools in the top 10 percent, the comparison group is the top 20 percent of schools; for schools in the lowest 10 percent, the comparison group is the bottom 20 percent of all schools.

Indicators presented in the performance reports include the following:

- academic course enrollments
- satisfaction of state university course requirements
- units required for graduation
- academic achievement test results
- drop-out rate
- attendance rate
- percentage of students taking the SAT and SAT scores
- percentage of students taking the ACT and ACT scores
- Advanced Placement (AP) test results
- university- and college-going rates
- performance of graduates attending state colleges and universities
- instructional time
- distributions by sex and race/ethnicity of academic course enrollments, test results, and college-going rates
- amount of homework
- student mobility

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The local performance report, an adjunct to the state-issued school performance report, provides qualitative and quantitative information gathered by local districts, not the

state. The state has not mandated issuance of these reports, and this may account for the fact that very few districts are producing them. The report provides an opportunity to address local conditions that affect student performance. It also allows schools to highlight "local" indicators. The experience of one of the districts visited for this study demonstrates both the process for completing local performance reports and the uses to which they may be put.

For the last three years or so this district has used a management information system to build a database that is used as an accountability tool. The information collected is based on the district's own goals, the effective schools literature, and local performance indicators suggested by the state. Data are gathered from surveys of parents, students, staff, and the community; a district faculty review; a dropout analysis; college attendance rates; financial summaries; and state and local testing programs. A steering committee of school principals set up data collection procedures, including selecting items to use in surveys, reviewing drafts of their school reports, and supplying additional information to round out their school profiles.

The profiles produced by the district are four-page compilations of information about each school and include graphics. Data from the surveys and testing programs, community demographic information, the year in which the school was built, the number of classrooms and teachers, average class size, and information on special programs are included. Principals are encouraged to prepare a page of unique, supplemental information about their schools.

While school district officials do not think that the presence of school report cards will necessarily make schools more accountable, they feel that the reports provide useful information for planning and improving education programs. In this district, the profiles are used during the year by board of education members and administrators for decision making. Principals use the profiles to compare their schools with district norms to identify areas where improvement may be needed. School Site Councils review the profiles as they review their school plans. Finally, many principals send the school profile home to each family (Larick and Enell, 1988).

Lessons From Experience

The net of what we have extracted from state experience is presented below and derives in significant part from the systems in place in the four states highlighted above, as well as on the other information available to the authors about other state experiences. The four states have encountered — and frequently resolved — many of the problems all states will encounter. While these lessons are not universally applicable, they do pinpoint concerns which we believe every state would profit from addressing:

- There is an understandable but often premature drive to report results so as to hold local school officials accountable;
- There is a reluctance at the state level to assume responsibility for the quality of the indicators system;
- There is a tentativeness with regard to the exploration of critical relationships among school processes, system outcomes such as student performance, and background or contextual variables; and
- There is slow and uneven formation of the necessary building blocks to support an indicator system.

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A Rush to Accountability

There has been a tendency to use budding state indicator systems to hold local school systems, schools, and school staff accountable for results before the system has the capability for adequately doing so. The reason for this is very understandable. For years, various leaders have expressed frustration at "foot-dragging" within the educational system on assessment and accountability. The recent round

of state-level reforms with concomitant increases in resources has provided a strong impetus to introduce local accountability measures in earnest. While understandable, this application of indicator systems may be short-sighted, because it may in time detract from the usefulness of the systems.

The goal of local accountability is an appropriate one to be sure. Proper incentives for positive behavior at the school level are a legitimate end toward which state indicator systems ought to be directed. How to get from where we are today to that end is the central challenge.

Often, critical intermediate steps have not been taken. Because attention and energy are directed straightaway at reporting local educational comparisons, the real promise of indicator systems is being overlooked. Policy makers are losing opportunities to understand what is happening and to analyze the reasons in terms of the whole state educational system so that clearer, more coherent directions might be identified and pursued.

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Indicator systems must be phased in properly, and this is more than just chronological ordering. State education systems are enormously complex. They have marked regional and local differences, and they are multiply governed at both the state and local levels. This requires that much care should be taken to identify and order the steps by which indicator systems are built at the state level. A logical progression of steps would first establish a statewide monitoring capability for setting direction and sending signals, followed by a more gradual progression toward the use of indicators for local accountability.

The states visited for this study, along with a few others, provide examples of indicator systems that are used for both state and local policy development and accountability. South Carolina, although best known for its use of indicators for local school accountability, has also endeavored to amass and display a wide range of statewide results for review by policy makers and others responsible for setting direction for the state's schools. New York State has relied heavily on reporting of local school results (CAR) but is also putting more emphasis on statewide indicators at the urging of the Governor's office and the legislature.

California and South Carolina have set the pace among the states in the use of indicators for local school accountability, through the issuance of individual school performance reports. For high performing schools, California extends the normal three-year review cycle and publicly recognizes those showing the greatest gains in achievement test results. In addition to publishing lists of the lowest performing schools, the state provides some technical assistance (OERI, 1988). South Carolina uses gains in tested student achievement to make monetary awards to schools and has established minimum criteria by which districts can be designated as "impaired." Other states, such as Illinois, issue school report cards. Yet, others, like Nevada, issue school district report cards. Neither go as far as establishing targets or attaching particular consequences to results. Connecticut, by contrast, has adopted a different posture, focussing attention at the outset principally on statewide results and shying away from local "report carding."

In sum, the progress made by states taking the lead in indicator systems development should help their state leaders set better direction for the schools. But there are still too few examples of state leaders acknowledging their own accountability for setting statewide direction as a precondition for holding others in the system accountable.

Appropriateness and Quality

As state indicator systems have developed there has been too little cognizance of the ultimate test all assessment efforts must meet: Is what is being assessed a faithful rendering of what is being sought in the system?

States have been reluctant to assume responsibility for making sure there is a good match between the indicator system and the articulated goals for change. Doing so is a fundamental requisite. The validity of the whole system is at stake. As state indicator systems have developed there has been too little cognizance of the ultimate test all assessment efforts must meet: Is what is being assessed a faithful rendering of what is being sought in the system?

The nét result has been a de facto delegation of concern about appropriateness from states to localities or to citizens at large — chiefly through the organs of the print and electronic media. What is often at work may be encapsulated as follows: "We at the state level cannot deal with the challenges presented by matching measurement systems with system purposes, so we will let you — local district or

local citizen — do the best you can at wrestling with the implications of the reports we have issued and the statistics therein."

Our concern goes beyond the technical aspects of designing instruments that faithfully assess what people are trying to achieve in schools. We are also concerned about the political process, the synthesizing of various points of view toward school achievement, as a basis for selecting questions and appropriate instruments. Only after the political process has crystallized key questions can concern shift to the development of appropriate instrumentation.

In South Carolina there has been a conscious attempt to involve, on a continuous basis, the major constituencies in setting goals for the educational system as a condition of assessing it. In Missouri, a similar process is just getting underway. In most other states, while there have undoubtedly been mission-determining exercises involving a wide array of interested parties, these have not been seen as integrally related to the development of state indicator systems.

While there are shortcomings in matching measures with goals, there are many examples of efforts to improve the measures themselves. For example, staff of the California state education agency in concert with the National Center for Education Statistics and the Council of Chief State School Officers are attempting to broaden the scope of dropout data collection to include grades below high school. South Carolina is endeavoring to increase the quality of its student and teacher attendance data. Perhaps more important, South Carolina is addressing a fundamental measurement problem by using longitudinal rather than cross-sectional data to assess school improvement.

Tentativeness in Exploring Key Relationships

While state leaders are gathering an increasing amount of data about the outcomes of schooling, school processes, and key background characteristics, they have a long way to go in the analysis of relationships among variables in these three areas. We have defined indicator systems as including an examination of relationships among these three groups of variables, and therefore, from our perspective, fully functioning systems do not exist until this happens.

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Focussing too narrowly on reporting of outcomes could render indicator systems less, rather than more, useful as time passes.

If there were to be a fall off, even a gradual one, during the next few years in student performance gains on tests and other outcomes, how valuable will the yield of state-level indicator systems be unless these relationships become the focus of attention? What will the systems have left to say to state leaders and citizens in need of evidence on how to fine tune policies and programs, or whether to change direction altogether? Focussing too narrowly on reporting of outcomes could render indicator systems less, rather than more, useful as time passes.

While it might be argued that such a fall off in test score gains and completion rate increases will not occur, there are good reasons to believe they might. After the impact of teaching to the test, Hawthorne effects, and other adjustments in local behavior to make results look good have faded, there may be little left to report except marginal increases or decreases in outcomes. At this point the rationale for state indicator systems may be undermined if they only track changes in test scores. The need to encompass analysis is well documented in a paper prepared by staff of the New York State Education Department on assessing educational progress. We quote:

> *"Any analysis must also recognize the process by which inputs are managed or manipulated to produce outcomes, positive or negative. In other words, the procedures, schedules, layouts, and management processes must be examined in terms of the methods by which inputs are consolidated and employed within the school. How are inputs combined and implemented to produce effective teachers, school buildings, districts, and intellectually and socially prepared graduates, compared to the less effective or outright failures? That is, what are the characteristics of the education process which engender increased student performance?*
>
> *Attention to process is important from two perspectives. First is the distinction between what evaluation experts characterize as theory failure versus implementation*

failure. That is, if an intervention fails to produce a specific outcome according to our theory, it may be a result of either a failure of that theory or how it was implemented. The only means for determining which is to keep a careful accounting of the implementation process. If the policy implementation was done as prescribed then theory failure is the culprit. This could indicate that the factors initially presumed to have caused the problem and which formed the basis of an original plan of action may have been incorrect. On the other hand, if the implementation varied from prescription then it is not necessarily a problem of theory failure but of implementation. In essence, being able to track process is critical in testing new policy interventions" (MacKinnon, 1988).

The challenge then is to identify what it takes to encourage deliberative policy making by states through the application of systems that not only render outcomes, but also provoke analysis of them. Investigations of processes that might generate certain effects define the essence of indicator systems. If areas for in-depth analysis are not identified, the usefulness of the systems is severely curtailed.

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While no state that we have examined has a complete indicator system in the sense just discussed, a few appear to have made significant inroads. The four front-running states that we visited — California, Connecticut, New York, and South Carolina — essentially have the necessary structures in place to begin to do such analyses. That is, they all collect data on inputs, processes, and outcomes. South Carolina reports on a statewide basis school-level outcomes and simultaneously provides a fair amount of data on school processes and background variables. California also collects and reports a large amount of data, but the state education agency itself does relatively little analysis in search of potential explanations. It tends to rely instead on Policy Analysis for California Education (PACE), an outside university-based group, to perform this function. Both South Carolina and California, however, have tried in their school performance reporting systems to account for contextual variables by "banding" schools into comparison categories using traditional socioeconomic and education measures; this in itself is a recognition of the importance of context variables.

Although Connecticut does not encourage the comparison of district test scores, community types are identified for each district. Districts are classified as large, fringe, or medium cities; suburban and emerging suburban; or rural. In the near future, state policy makers anticipate the development of a district classification system that will permit fair comparisons among districts. Connecticut is working on categorizing communities by family background characteristics from the census. If successful, districts with pupils of similar backgrounds will be classified together, permitting fairer comparisons of educational results (Prowda, 1988).

New York's Comprehensive Assessment Report program publishes "reference group data" or data aggregated according to various school classifications. These include public, nonpublic; type of community or district; county; and statewide, with and without New York City. In addition, the state has done some work in developing a methodology to identify distressed areas having the most severe combination of educational, social, and economic need in the state (New York State Education Department, 1987). While the resulting process will be used to target educational resources supporting the delivery of school-based services to identified areas, this type of methodology could also be relevant to efforts to cluster schools into homogeneous units that could form the basis for comparison groups.

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What seems to be missing at this point is the impetus to go further. Why? Many of the current systems are tied to basic accountability and program implementation issues. State policy makers want to know if and how districts are implementing programs and what their effects are. Indicator systems, as we have described them, seem to be viewed as "too elegant." Aside from the research community and many state education agency staff, there is little interest in such relational frameworks: state legislators, the business community, and the public are interested in results. There is also concern among some state policy makers that the knowledge base of what works in education is insufficient to support such an approach to an indicator system. Finally, state education agencies are busy putting out other fires and their research and analysis capacities are not what they once were, with a few exceptions.

Block by Block

While many states are increasing their data gathering and reporting efforts, most seem to be in the beginning stages of assembling the building blocks necessary for the formation and nurturance of complete indicator systems. There are certain capacities, organizational norms, and systems features that make for a firm foundation of a successful system.

Critical capacities include, first and foremost, a database that is comprehensive and well integrated.

Critical capacities include, first and foremost, a database that is comprehensive and well integrated. Well-organized data collection procedures are a must. Since the data system contains information from multiple sources, its usefulness depends on the degree to which data files are integrated, i.e., folded into a common framework so that movement from one file to another is possible with relative ease. The database is the rock on which the system is built. The sophistication of database development accomplished by California, Connecticut, New York, and South Carolina is worthy of note. At least in these four states there is a database capable of supporting a state indicator system.

The state education agency must also have an analytic capability, however modest.

The state education agency must also have an analytic capability, however modest. The staff must be able to create predictive models, conduct special studies, and search for relationships that might provide some evidence to link what is happening in the educational system to possible explanations. New York and Connecticut stand out as having advanced to the point of being able to support a small number of analysts within the state education agency to do creative work.

The managers of indicator systems should be afforded a certain degree of autonomy.

Next, the agency should consolidate, or at a minimum, coordinate firmly, agency-wide data gathering, analysis, and reporting functions. There is, we believe, wisdom in combining all existing state education agency organizational capacities that deal with data gathering, analysis, and reporting. This includes vocational and special education as well as teacher certification and bilingual education, if appropriate. Difficult as it might be to accomplish this feat, it is probably the only way that hard pressed state education agencies can assemble a critical mass of resources for database and indicator systems development. Normally there are significant disadvantages to what may be called "empire building" in bureaucratic organizations. But in this case where considerably undernourished func-

tions are involved, collecting resources together may yield positive rather than harmful results.

In addition to these basic capacities, the managers of indicator systems should be afforded a certain degree of autonomy. Obviously, in a public agency this independence must be limited. But it is important, after the "governors" of the educational system have engaged in deliberations to help set direction for the indicators system, that its staff be allowed room to operate and be provided a buffer zone to produce. Connecticut and South Carolina, in different ways, have tackled the problem of the quasi-autonomy necessary for the indicators unit — South Carolina through the creation of a partially autonomous Division of Public Accountability within the state education agency, Connecticut through the recognition by top leadership in the state education agency of the need for a quasi-independent research and evaluation unit.

Beyond the organizational capacities that state education agencies need to support an indicator system are several design features that can add immeasurably to the system's proper functioning over time. At the top of the list are three:

- the availability of school level data;
- the availability of information on the quantity and capability of school staff; and
- careful consideration of the "unit" of data collection, analysis, and reporting.

Whether a state wants to report data by school or not, it should collect it by school and analyze it by school.

Whether a state wants to report data by school or not, it should collect it by school and analyze it by school. The school is the recognized unit for the provision of educational services. Missouri, for example, does not intend to issue school performance reports at this juncture. It recognizes, nonetheless, that to learn important things about the quality of education in the state, school level data should be gathered. Only California, New York, South Carolina, and a handful of other states are able to generate extensive school-level data. We recommend that others join them whether or not they intend to issue school "report cards".

Similarly, state education agencies should build up their staff data files, focusing on teacher data. Significant concern exists in almost all states about the character of the teaching force and the quality of school instruction. Worthy

indicators of staff qualifications and teaching quality are few and far between, however. With more indicator information, states would be equipped to deal with teacher shortages in specific subject areas or geographic regions and with the challenge of assisting districts to improve hiring and evaluation practices. (For a comprehensive discussion of the data needed for evaluating the effects of current and proposed teacher policies, on both state and local levels, see Darling-Hammond, et al, 1986.) Connecticut, more so than its counterparts, has sought to establish a fairly comprehensive teacher database from which it might be able to judge whether or not the state's extensive teacher policy reforms are paying dividends.

A third system feature has to do with data aggregation and disaggregation. Consensus on the appropriate unit of analysis should be achieved for all three functions — collection, analysis, and reporting. In an ideal sense, the most versatile database to support an indicator system would be one where the basic units of reporting are students and teachers. From there one could aggregate up to class, school program, school, district, sub-state area, and state as a whole. Interestingly, several states, including New York and Minnesota, have aspirations to build such databases. Their task is formidable. Thirty data elements multiplied by three million students is 90 million datum. With student mobility figures that can range up to 25 percent and fluctuating student characteristics, maintaining accurate files would be quite a challenge. On balance, some scope and range might be traded off for the capability to disaggregate data to the level of the school and individual teacher. Roughly three quarters of the states would have a considerable distance to go just to attain this level of disaggregation.

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Necessary Steps

For the survival and usefulness of indicator systems, steps not yet taken need to be taken soon. We are not suggesting that states that have moved to develop systems interrupt their momentum. Rather, as they proceed with systems development, we suggest that they close existing gaps in the foundations of their systems.

We recommend these steps:

<u>First, engage a design process that includes all appropriate educational, business, and political leaders with a</u>

Engage a design process that includes all appropriate educational, business, and political leaders with a stake in the health and welfare of the state's educational system.

stake in the health and welfare of the state's education system. The explicit aim is to determine the central questions that a state indicator system has to answer. The broad-based involvement in the development of South Carolina's education reform program, out of which the state's indicator system was born, is an example of such a conscious design strategy. When the state's former governor went to the people in 1983 and announced a program of major reform, he began with the recognition that, "we can raise our public schools from the bottom of the list, but it will take the involvement and investment of the whole state to do it." This grassroots effort was coordinated out of the Governor's office and the State Superintendent's office and was actively supported by all of the major education associations, assisted by two blue-ribbon committees of 61 state leaders from business, education, and the legislature. Activities included local discussion groups, lobbying teams, speaker bureaus, school visitation teams, and telephone banks (Peterson, 1988).

Establish specific procedures at the state level to assure greater appropriateness and quality in the assessment instruments used.

Second, establish specific procedures at the state level to assure greater appropriateness and quality in the assessment instruments used.

- Consciously assess the impact of current testing programs on instruction. South Carolina has the beginnings of a vehicle for addressing this issue through periodic surveys of teachers. Missouri intends to use surveys to ask its teachers directly what the impact of testing has been on instruction.

- Pilot more broad-gauged student assessments using small state samples. The Connecticut Assessment of Educational Progress is a good example. In addition, both California and Connecticut have done considerable work on the assessment of higher order skills. Vermont, one of the few states in the nation without a state testing program, is proposing a pioneering effort to assess students on the basis of work portfolios.

- Build checks and balances into the system by developing a core indicator system complemented by surveys of attitudes and sample school probes. The core system should be composed of basic indicators of important inputs, processes, and outcomes collected over time to capture aggregate effects of educational policies. This basic

model, of course, would vary from state to state, depending on a host of factors such as state and local capacity, policy focus, priorities, and reform activities. The system would be an "open" one, easily modified to include new research, changes in policy focus, feedback resulting from the system, and so forth. This core system should be augmented with special surveys and studies of a selected sample of schools ("weathervane schools") to collect information on the attitudes and opinions of various groups and to provide an in-depth, qualitative asssessment of program impacts. The results of these local "probes" can also be assayed against the yield of the core system to provide a check on the validity of the indicator system.

Focus statewide data collection on selected variables identified in the state's variant of the "input, process, outcome" framework suggested in Figure 2.

Third, focus statewide data collection on selected variables identified in the state's variant of the framework suggested in Figure 2. Such variables as amount of active classroom teaching time, amount of class time teachers use to question students, percentage of part-time and substitute teachers employed, extent of curriculum tracking, and amount of released time teachers have to observe other teachers have been mentioned as deserving of examination for inclusion in an indicators system where exploring relationships is as important as measuring outcomes. (For a useful discussion of these variables, see Darling-Hammond, et al, 1986.) Each variable must be scrutinized to see if a relationship to performance has been established by research and can be adequately measured in an indicator system. By incorporating a greater capacity for policy analysis into the system, states will be in a position to be more helpful to localities seeking to improve schools. While it may be difficult to prescribe proper remedies, such complete systems should provide clues that would be missed in haphazardly constructed systems.

Emphasize school-level data gathering and analysis as a minimum requirement and gather data by student if possible.

Fourth, emphasize school-level data gathering and analysis as a minimum requirement and gather data by student if possible. The purpose here is not to increase the possibilities for shock value in public reporting of data by school or by student descriptors such as race/ethnicity or socioeconomic status, but to afford state-level policy makers the perspective for more refined judgments and to provide them with greater insight into school processes and school and community context. The ideal would be more analysis and less reporting of data by

school and student levels until the indicator system can become firmly established. This would not only make for a healthier indicator system but a healthier education system as well. New York's work on student database development and the work on indices of community need discussed earlier are illustrative here.

Finally, build the necessary infrastructure to support the development of indicator systems by allowing for the partial autonomy of the analytic unit working on the data base and building in proper protections before data are collected to preserve the ability of the system to fulfill the baseline purposes intended for it by state leaders. Examples of promising practices in several states have been mentioned above.

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